

01/24/02  
JC923 U.S. PTO

JC971 U.S. PTO  
10/053634

01/24/02

This application is qualified  
as Small Entity

I. Zborovsky  
R.N. 28563

BE IT KNOWN that I, **Glenn Gordon MARSHALL**, have invented  
certain new and useful improvements in

**DUST WITHDRAWAL ARRANGEMENT**

of which the following is a complete specification:

## BACKGROUND OF THE INVENTION

The present invention relates to dust withdrawal arrangements.

More particularly, it relates to dust withdrawal arrangements which can be used for example in mineral laboratories during sample preparation.

Dust withdrawal arrangements are known in the art. Some dust withdrawal arrangements include standard tubular pipe extraction systems. The known systems have certain disadvantages, in particular fines are lost from mineral samples during sample preparation, and/or other samples awaiting preparation are contaminated. Also, the amount of dust in the work environment is not sufficiently reduced to satisfy health and safety concerns.

## SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a dust withdrawing arrangement which avoids the disadvantages of the prior art.

In keeping with these objects and with others which will become apparent hereinafter, one feature of the present invention resides, briefly in a dust withdrawing arrangement which has a plurality of individual enclosures each enclosing a respective one of working areas from which dust has to be removed; a common enclosure which is arranged around said individual enclosures; means for creating a negative pressure in an interior of said common enclosure; and passage means associated with each of individual enclosures and leading exclusively from each of the individual enclosures to the interior of said common enclosure without communicating with other individual enclosures.

When the dust withdrawing arrangement is designed in accordance with the present invention, it allows dust withdrawal from each individual work station without intermixing with dust from other work stations, so that cross contamination of samples in the work stations is prevented and

no fines are lost from samples in various working stations. Also, the amount of free dust in the work environment is reduced to better address health and safety concerns.

The novel features which are considered as characteristic for the present invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a view schematically showing a dust withdrawing arrangement in accordance with the present invention illustrating two work stations;

Figure 2 is a plan view of the inventive dust withdrawal arrangement;

Figure 3 is a side view of the inventive dust withdrawal arrangement in a cross-section;

Figure 4 is an end view of the inventive dust withdrawal arrangement in a cross-section.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

A dust withdrawal arrangement in accordance with the present invention is identified as a whole with reference numeral 1. The inventive dust withdrawal arrangement has a common enclosure which is identified with reference numeral 2 and encloses an inner space 3.

The arrangement is provided with a source of negative pressure which creates negative pressure or vacuum in the inner space 3 of the common enclosure 2. The negative pressure or vacuum source can be formed for example as an extraction blower 4 which communicates with the inner space 3 through a plurality of intake vents 5.

The dust withdrawal arrangement of the invention further has a plurality of individual enclosures which are identified with reference numerals 6, 6', etc. Each of the individual enclosures limits an inner space which is identified with reference numerals 7, 7', etc and receives a corresponding work station. The individual enclosure 6 are spaced from one another, for example in a horizontal direction.

Each of the individual enclosures is provided with a passage or a gap which is identified with reference numerals 8, 8' etc and are formed so that, when a negative pressure or vacuum is produced in the inner space 3 of the common enclosure 2, dust accumulated in each of the individual enclosures, for example in the inner space 7, the individual enclosure 6 is aspirated through the passage or gap 8 directly into the inner space 3 of the common enclosure 2 without intermixing with dust into other inner spaces, for example to the inner space 7'.

As can be seen from the drawings, in the illustrated embodiment each passage or gap has a portion 9 through which the dust from one individual enclosure passes, and then a joint passage 10 which can be formed as a space between two neighboring individual enclosures. As can be seen from figures of the drawing the inner space 3 inside the common enclosure includes a partial inner space 3' located at opposite sides of the enclosure, a partial inner space 3" located above the individual enclosures, and a partial inner space 3" located behind the individual enclosures. It is believed to be clear that the inner space 3 inside the common enclosure 2 can be located at any and/or sides of the individual enclosures. It is also believed to be clear that any source of creating a

negative pressure or vacuum in the inner space 3 of the enclosure 2 can be used for the inventive arrangement.

The inventive arrangement operates in the following manner. When in the work stations sample preparation is performed and the source of negative pressure or vacuum is activated, dust from each individual enclosure which encloses each individual station is aspirated through each individual passage or slot into the inner space of the common enclosure. The low velocity of an airflow in the inner space 3 allows the dust particulate to settle on the floor of the inner space 3, allowing only clean air to exhaust from inner space 3.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in dust withdrawal arrangement, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims.